and sunk costs is that developers write their applications only to those operating systems that have a large enough installed base to generate sufficient sales to justify the developers' development costs.

101.   An application that is written for one PC operating system will operate on another operating system only if it is converted (or "ported") to run on the other platform. Porting applications is both time-consuming and expensive. Therefore, applications developers tend to write first to the operating system with the most users. Developers might then convert their applications to other operating systems, but only to the extent that the added sales justify the cost of conversion, including opportunity costs. In order to recover those costs, ISVs that go to the effort of converting these products frequently set the prices of the ported applications considerably higher than the prices for the original versions.

102.   The applications barrier to entry also results from the positive network effect associated with computer software. That is, the attractiveness of an operating system increases with the number of people using it. As a result of the multitude of people using MS-DOS or Windows, ISVs have tended to write applications first and foremost to run on those Microsoft operating systems, thereby ensuring a large body of applications for that platform. The large body of applications for MS-DOS and Windows in turn reinforces demand for Microsoft's operating systems. This self-reinforcing "positive feedback loop" augments Microsoft's dominant position in the operating systems market and perpetuates ISV incentives to write applications principally for MS-DOS and Windows.

103.   The small or non-existent market share of an aspiring competitor makes it prohibitively expensive for a potential entrant to develop its PC operating system into an acceptable substitute for MS-DOS or Windows. To provide a viable substitute for MS-DOS or

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Windows, another PC operating system would need a large and varied base of compatible applications that were comparable to Microsoft's library in size and variety. Even if the aspirant attracted several thousand compatible applications, the alternative operating system would still look like a gamble from the consumer's perspective next to MS-DOS and Windows, which support tens of thousands of applications. The amount it would cost an operating system software vendor to make that many applications available would be prohibitively large.

104. In deciding whether to develop an application for a new operating system, an ISV's first consideration is the number of users it expects the operating system to attract. Out of this focus arises a collective-action problem: each ISV realizes that the new operating system could attract a significant number of users if enough ISVs developed applications for it; but few ISVs are willing to sink resources into development for the platform until it becomes established. Since everyone is waiting for everyone else to bear the risk of early adoption, the new operating system has difficulty attracting enough applications to generate a positive feedback loop. The vendor of a new operating system cannot effectively solve this problem by paying the necessary number of ISVs to write for its operating system, because the cost of doing so would dwarf the expected return.

105. The experiences of IBM and Apple, Microsoft's only significant operating system rivals in the 1990s, demonstrate the strength of the applications barrier to entry that Microsoft created and maintains.

106. IBM introduced its OS/2 Warp operating system for Intel-compatible PCs in late 1994, and subsequently spent tens of millions of dollars in an effort to attract ISVs to develop applications for the operating system. In a related effort, IBM also undertook efforts to reverse-engineer key aspects of Windows APIs. Despite these efforts and expenditures, IBM could not

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obtain either significant market share or ISV support for OS/2 Warp. The enormous Windows installed base made it prohibitively expensive for IBM to continue attempting to attract enough software developer support to challenge Windows. Although at its peak OS/2 Warp accounted for approximately ten percent of the market for Intel-compatible PC operating systems and ran about 2,500 applications, IBM ultimately determined that the applications barrier to entry enjoyed by Microsoft prevented effective competition against Windows 95. For that reason, IBM in 1996 ceased its efforts to have ISVs write applications for OS/2 Warp. IBM now targets OS/2 Warp at a market niche, consisting mainly of banks that use particular kinds of applications that run on OS/2 Warp.

107.   Apple provides another example of the strength of the applications barrier to entry enjoyed by Microsoft (although Apple's Mac OS does not run on Intel-compatible microprocessors and therefore is not within the same relevant market as Windows). Apple's Mac OS operating system supports more than 12,000 applications. Nevertheless, even an inventory of that magnitude is not sufficient to enable Apple to present a significant percentage of users with a realistic substitute for Windows. The absence of a large enough installed base of Mac OS users reinforces the disparity between the applications made available for Mac OS and those made available for Windows, further inhibiting Apple's sales.

108.   As Microsoft has consistently been aware, its dominant share of the market for operating systems for Intel-compatible PCs has been the principal contributing force in creating and maintaining the applications barrier to entry into that market. As Microsoft has also consistently been aware, it is directly due to the applications barrier to entry into the operating systems market that Microsoft was able to establish the supra-competitive prices for its operating systems software. The experience with Windows 98 licenses, as set forth above, provides a

telling example. Microsoft established the price for Windows 98 licenses without regard to competition, at a monopoly price in excess of what Microsoft would have been able to charge in a competitive market. Plaintiffs and the other members of the Class were forced to pay those monopoly prices.

109.   While the applications barrier to entry has been formidable, it is not necessarily insurmountable or permanent. As described further below, middleware products appeared in the market in the late 1980s and in the 1990s that threatened to eliminate that barrier. Microsoft, however, was vigilant and successfully undertook anti-competitive acts and practices to forestall and eliminate middleware and similar threats and retain the full force of the applications barrier.

110.   All of Microsoft's unlawful actions in maintaining the applications barrier to entry have had as their ultimate unlawful purpose, and have had the resulting unlawful effect of, enabling Microsoft unlawfully to exercise its monopoly power by licensing its operating systems for Intel-compatible PCs without regard to competition and at a monopoly price in excess of what Microsoft would have been able to charge in a competitive market, to the injury of Plaintiffs and members of the Classes.

MICROSOFT'S ANTI-COMPETITIVE ACTIVITIES IN THE OPERATING SYSTEM MARKET

Overview

111.   As a result of its predatory conduct, Microsoft successfully fended off challenges to its operating system monopoly. The first challenge came directly from competing operating systems such as Digital Research's DR-DOS, and IBM's OS/2, and later from Be, Inc.'s ("Be") BeOS, Go Corporation's ("Go") Pen Point, and the "open source" GNU/Linux operating system. DR-DOS and OS/2 were positioned to compete vigorously against MS-DOS and early versions

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of Windows. Through a series of predatory acts from 1988 through 1994, however, Microsoft essentially eliminated both DR-DOS and OS/2 from the market. BeOS, on the other hand, emerged later (around 1998), long after Microsoft had established its monopoly power in the operating systems market. When Be threatened Microsoft's hegemony by pursuing a "dual boot" strategy to overcome the applications barrier to entry, Microsoft responded with a series of anti-competitive acts which drove Be from the market.

112.   The second type of challenge to Microsoft's monopoly was posed by several middleware products which from 1988 to 1998 threatened to weaken or circumvent the applications barrier to entry that insulated Microsoft from competition. Following the elimination of DR-DOS and OS/2 as viable alternatives to its operating systems, Microsoft realized that the most significant potential threat to its Windows monopoly did not come from a direct attack by existing or new operating systems. Microsoft recognized that, instead, applications barrier to entry could be seriously eroded—and Microsoft's operating system monopoly correspondingly threatened—by new software products that could support, or even themselves become, alternative platforms to which applications could be written and which could be used in conjunction with multiple operating systems including, but not limited to, Windows.

113.   In 1981, Microsoft became a significant supplier of PC operating system software when it contracted with IBM to design and develop operating system software for the IBM personal computer. By the mid-1980s, Microsoft's MS-DOS operating system had become entrenched as the standard for Intel-compatible personal computers.

114.   By 1987, several OEMs, whose computers were sold with operating systems pre-installed, approached Digital Research, a Microsoft competitor, about developing a better

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operating system than MS-DOS.   In 1988, Digital Research released its operating system software under the name DR-DOS.   Given the relative lack of complexity of MS-DOS at that time, Digital Research was readily able to clone Microsoft's software (i.e., DR-DOS could support the same applications software as MS-DOS supported).   In addition, DR-DOS included features that MS-DOS lacked.   DR-DOS received numerous industry awards and was sold at a lower price than MS-DOS.

115.   Unable or unwilling to legitimately compete with DR-DOS by attempting to offer a better or lower-priced product, Microsoft instead embarked on a series of unlawful predatory acts designed to drive Digital Research from the market.   These predatory acts focused largely on the OEM channel, which distributed the vast majority of operating system software by pre-installing it on computers.   By controlling this critical distribution channel to the exclusion of DR-DOS, Microsoft made Digital Research's competitive position untenable, and by 1994 Digital Research was forced to exit the market.

116.   Microsoft realized by the mid-1980s that MS-DOS was becoming obsolete and therefore began working with IBM to develop the next generation operating system.   The first version of Microsoft and IBM's joint efforts was released in 1987 under the name OS/2. However, by 1990 Microsoft's Windows software (which contained some of the graphical user interface ("GUI") elements that Microsoft had been developing for OS/2), was gaining popularity, and Microsoft decided to focus its efforts on Windows to the exclusion of OS/2. IBM took over exclusive development of OS/2. The second generation of IBM's OS/2 won over many Window 3.x users because of its superior performance.

117.   Again, unable or unwilling to compete on the merits, Microsoft resorted to a course of anti-competitive conduct directed at OS/2.   By the end of 1994, Microsoft's predatory

conduct had the desired effect of eliminating OS/2 as a significant competitor.   Many of

Microsoft's anti-competitive acts were the same as or similar to those targeted at DR-DOS.

118.   With Microsoft's two main competitors essentially out of the market, any

challenge to Microsoft's monopoly could only come from a new entrant. But—as noted above—

any potential competitor faced the applications barrier to entry. By 1994, moreover, a new

competitor could not circumvent the applications barrier by cloning Windows since Microsoft's

software had become much too complex to be cloned.

119.   Since at least the late 1980s, part of Microsoft's strategy has been to protect its

operating system monopoly by unlawfully maintaining the applications barrier.   The most

serious threat to the applications barrier has come from middleware, which exposes APIs (or

their equivalent) that can substitute for or enhance some of the functionality of the operating

system. Applications written to middleware APIs, therefore, can run on any of several operating

systems.   Thus, middleware has the capacity to weaken or eliminate the applications barrier to

entry by, as Bill Gates stated, "commoditizing" the operating system. Whenever middleware has

threatened to undermine or eliminate the barrier, Microsoft's response has been swift and

predatory.

120.   An early threat came from Mirrors, Micrographx's software developer tool that

allowed applications designed to run on MS-DOS to also run on OS/2. Microsoft's exclusionary

conduct, however, drove Mirrors from the market.

121.   Borland International, Inc.'s ("Borland") developer tools (which were the market

leader in the early 1990s) allowed software developers to easily convert applications from one

operating system to another. As with Mirrors, Microsoft engaged in anti-competitive conduct

that essentially eliminated Borland's product from the market.

122.   The Micrographx and Borland threats were followed in the mid-1990s by a string of middleware and other products that threatened to diminish the applications barrier to entry: (1) a software product called Notes, distributed first by Lotus and then by IBM, (2) Netscape's Navigator web browser, (3) Java technologies, a programming language and related software developed by Sun Microsystems, (4) Intel's Native Signal Processing software, (5) Apple's, Burst.com's and RealNetwork's multimedia playback technologies, and (6) workgroup servers and similar products from Sun Microsystems, Novell, and Samba.

123.   Microsoft understood that each of these Middleware and other products facilitated the development of applications programs that would be indifferent to the identity of the underlying operating system.   Consequently, Microsoft responded predatorily to each such product.

124.   During the late 1990's, Microsoft confronted a new operating system entrant in Be's BeOS.   BeOS was developed as a powerful, graphical, easy to use computer operating system capable of handling the vast streams of data required by multimedia applications.   From the time of its release in the Fall 1998, BeOS for Intel-compatible PCs received widespread praise from journalists and industry leaders for its technical capabilities, speed and ease of use.

125.   Recognizing that the applications barrier to entry made any immediate attempt to displace Windows prohibitively expensive, Be attempted to position BeOS as a "complement" to Windows and thus adopted a "dual boot" strategy.   Microsoft, however, used anti-competitive OEM licensing terms, coupled with threats, to force OEMs not to pre-install BeOS alongside Windows on their PC products.

Exclusion of DR-DOS

126.   In 1981, Microsoft contracted with IBM to design and develop the operating system software for the IBM PC. Microsoft acquired rights from another company for a product called "QDOS," which borrowed heavily from an operating system developed by Digital Research called CP/M. Microsoft changed the name of QDOS to MS-DOS and licensed it to IBM and others.

127.   By the mid-1980s, MS-DOS had become entrenched as the standard in the Intel-compatible PC operating systems market. The price of MS-DOS in the OEM channel escalated from $2-$5 per copy in the 1981-1982 period to $25-$28 per copy by 1988.

128.   Because of Microsoft's apparent decision not to innovate or extend the capabilities of MS-DOS, a number of OEMs approached Digital Research to develop an improved version of DOS. In addition, a number of OEMs who simply could not get Microsoft to deal with them expressed an interest in Digital Research as an alternative DOS software supplier. Accordingly, in 1987 Digital Research began planning a new version of DOS to be called DR-DOS.

129.   The result of Digital Research's efforts was a product designated as DR-DOS 3.31, introduced in 1988. That version was followed by an enhanced DR-DOS 5.0 in 1990 and DR-DOS 6.0 in 1991. Those DOS versions were significantly superior to then-existing versions of MS-DOS in many areas, receiving numerous industry awards and enthusiastic reviews. DR-DOS was offered at prices below the inflated price levels of MS-DOS products.

130.   Microsoft responded to the DR-DOS threat with a number of anti-competitive

practices, including:

a. Microsoft constructed a wall of per processor licenses beginning in 1988 when DR-DOS was released. Microsoft OEM status reports contained repeated references to these practices, such as: "Opus agreement has finally been signed by Redmond. Another DRI prospect bites the dust with a per processor DOS agreement," or "DRI visited Hyundai executives and pricing issue was raised again. The new license is a per processor deal, which allowed us to completely kick out DRI." One OEM, U.S. Micro Express, stated with respect to a per processor license that "We were not given the option of licensing MS-DOS on any other basis";

b. Microsoft also entered into long term "take or pay" minimum commitment licenses. Even though the life cycle of a DOS release was somewhat less than two years, Microsoft pushed for agreements of two or three years in duration. This was a key part of the "Strategy Against DRI" presented in June 1991 to the Microsoft OEM sales force;

c. Furthermore, Microsoft required prepaid balances from OEMs, tying them to Microsoft through the threat that they would forfeit any prepaid amount not used during a contract period unless a new license was signed;

d. In order to deter end users from running Windows on top of DR-DOS, Microsoft implemented a "DOS clone check" in 1989 on foreign versions of Windows, as evidenced by this message from the Microsoft Korean subsidiary:

> Bill Gates ordered all application business units to include checking routines of operating environments and if it is Microsoft DOS, nothing will happen. But if it is non MS-DOS (such as DR-DOS), application will display messages saying that "This application has been developed and

tested for MICROSOFT MS-DOS. Since you use different environment, this application may not work correctly. . . ."

A similar DR-DOS detection and warning was implemented in Microsoft's QuickPascal, with a message that warned that use of the product with another operating system "may void valuable warranty protection by Microsoft . . . ";

e.   Microsoft made false, misleading and premature announcements such as the one in June 1990 (within a week of Digital Research's announcement of DR-DOS 5.0) that Microsoft intended to release by September 1990 MS-DOS 5.0, that would have all the technical advantages of DR-DOS 5.0. In the end, MS-DOS 5.0 was not released until June 1991—over one year after Microsoft's announcement—and it was released without the promised features. Microsoft made similar preemptive "vaporware" announcements of MS-DOS 6.0, MS-DOS 7.0 (which never came to market as a stand-alone product) and Windows 95, in direct response to DR-DOS 6.0 and Novell DOS 7.0. (Novell acquired Digital Research in 1991.) Microsoft knew these announcements were false and misleading when made and essentially stalled the market for DR-DOS as consumers waited for the "features" which did not exist at the time of announcement, nor when the products were finally released;

f.   Microsoft engaged in merger discussions with Novell immediately after Novell's acquisition of Digital Research, and insisted as a part of the proposed merger that Novell divest Digital Research, with the ulterior purpose of causing Novell to slow down its integration of DR-DOS. When Microsoft's merger discussions broke down in 1992, Microsoft fatally wounded DR-DOS as a competitor;

g. In Fall 1991, Microsoft announced that DR-DOS would not be compatible with the next release of Windows, scheduled for release in April 1992. To reinforce the impression of incompatibility, Microsoft released "beta" (i.e. test) versions of Windows containing code that generated misleading error messages when Windows ran on top of DR-DOS;

h. Microsoft created deliberate incompatibilities between Windows and DR-DOS, so that Windows would not run properly on DR-DOS;

i. Microsoft unleashed a "FUD" campaign to create "fear, uncertainty and doubt" in the OEM and retail channel regarding the use of DR-DOS. In May 1991, Sergio Pineda of Microsoft circulated to all OEM account managers the following regarding the theme of the campaign:

> Any degree of incompatibility is enough to create fear, uncertainty & doubt among end users when it comes time to buy new systems — this suggests that PC OEMs will take on a big risk if they ship DR-DOS with their systems.
>
> We recommend that we "informally" plant the bug of FUD in their ears.

j. As part of its FUD campaign, Microsoft reported supposed flaws in DR-DOS to the media as crippling "bugs," while not mentioning to the media that MS-DOS releases had such severe bugs that Microsoft was required immediately to release "patches" to cure them. A July 1991 memo from a Microsoft executive states: "We are engaged in a FUD campaign to let the press know about some of the bugs. We'll provide info a few bugs at a time to stretch it out";

k. Microsoft put Novell on a "beta blacklist," refusing to provide a Windows 3.1 beta to Novell's DR-DOS development team, and thereby hampering Novell's

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ability to offer a Windows 3.1-compatible release of DR-DOS;

l.   Microsoft inserted secret, encrypted code into the final Windows 3.1 (beta) version that triggered a false error message whenever a computer was running DR-DOS with Windows. This AARD Code had the intended effect of creating concern among OEMs about DR-DOS. The code was removed from the final (nonbeta) version of Windows 3.1;

m.   Microsoft informed certain OEMs that they could not obtain Windows or be given access to essential information, product support and service, if they did not purchase and ship MS-DOS to the exclusion of DR-DOS or enter into per processor licenses for MS-DOS and Windows;

n.   Microsoft retaliated against industry participants that supported DR-DOS. For example, when Z-Nix Inc. bundled DR-DOS 6.0 and Microsoft Windows 3.1, proclaiming no incompatibilities, Microsoft's Brad Silverberg wrote: "look what znix is doing! cut those fuckers off." Within three weeks, Microsoft demanded an audit of Z-Nix's entire business and then commenced a copyright and trademark infringement action. Z-Nix was forced to file for bankruptcy in or around 1995;

o.   Microsoft established a pricing structure for Windows that made it prohibitively expensive to buy that product without also buying MS-DOS. Microsoft often instructed some of its OEM account managers to inform their OEMs that the price for Windows alone would be higher than the price of Windows and MS-DOS combined.\

131.   In its efforts to unfairly compete with DR DOS, Microsoft was willing to misappropriate Stac Electronics Inc.'s innovative STACKER disk compression technology. DR

DOS already included disk compression technology, while MS-DOS did not.

132.   In September 1994, as a result of Microsoft's anti-competitive conduct, Novell announced that it would cease the marketing and development of DR-DOS. After Novell's announcement, the price of Windows increased. Microsoft had succeeded in eliminating the one competitor that, because its DOS program had the same original source as Microsoft, was not affected by the applications barrier to entry.

<p align="center">**Virtual Elimination of OS/2**</p>

133.   In the mid-1980s, Microsoft and IBM decided to collaborate on a new operating system that would replace MS-DOS. The product, which was later sold under the name OS/2, was intended to be a state-of-the-art, GUI-based operating system. However, as Microsoft's Windows software became more successful and as Microsoft's monopoly position became more entrenched by Microsoft's per-processor licensing and other exclusionary tactics, the company lost interest in collaborating with IBM. In 1991, IBM and Microsoft terminated their joint development agreement, leaving IBM to continue development of OS/2 alone.

134.   After Microsoft's relationship with IBM ended, Microsoft launched a predatory campaign to drive OS/2 from the market. It pursued a course of conduct very similar to the one it used to exclude DR-DOS from the market. Thus, Microsoft relied on restrictive OEM licenses that effectively cut off IBM from the critical OEM channel; it made false and misleading vaporware announcements and pre-announcements; it refused to write its applications to run on OS/2; it engaged in FUD campaigns and product disparagement in an effort to devalue OS/2 in the minds of applications developers, OEMs and consumers; and it created deliberate incompatibilities between Windows and OS/2.

135.   Microsoft required developers that wanted to obtain a "Designed for Windows

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95" logo to make certain that their product also worked with Windows NT. In addition, as alleged below, Microsoft engaged in exclusionary conduct to drive a number of developer tools from the market that had enabled applications originally written to run on Microsoft's operating systems to be ported to OS/2. This limited the number of developers writing applications for OS/2.

Microsoft's Predatory Campaign Against Go.

136.   Go was the developer of PenPoint, a PC operating system designed primarily for what was then known as "pen based computing" and is now known as "tablet computing." Go's technology was sufficiently promising and innovative to catch the attention of the leading microprocessor manufacturer, Intel, which sought to engender some competition in the market dominated by Microsoft. Intel initially offered to provide Go with substantial financing and a valuable endorsement of Go's technology. When Microsoft learned of Intel's prospective support of a rival operating system, its CEO, Bill Gates, personally approached Intel and demanded that Intel withdraw its support of Go's technology. Intel did so, by withdrawing its endorsement and dramatically scaling back its investment. Microsoft also forced Compaq to license Microsoft's "Pen Windows" instead of Go's software. (Microsoft's collaboration with Intel and Compaq was almost identical to Microsoft's more recent collaboration with the same firms against Linux.) As a result of those restraints, together with Microsoft's unauthorized use of Go's valuable trade secrets and other predatory acts directed at Go, Microsoft put Go out of business.

Microsoft's Predatory Conduct Toward Be

137.   Be was founded in 1990 for the purpose of creating a powerful, graphical, easy to use operating system capable of handling, on low-cost personal computers, the vast streams of data required in multimedia applications. In Fall 1998, Be—in collaboration with Intel—created a version of BeOS for Intel-compatible PCs which received widespread praise in the industry.

138.   Be recognized the obstacle posed by the applications barrier to entry, and consequently Be offered to license BeOS to OEMs for pre-installation on PCs in a "dual boot" configuration. Such a configuration would allow the end user to choose which operating system (BeOS or Windows) to load when the computer was turned on. Be's "dual boot" strategy would circumvent the applications barrier by allowing consumers to use BeOS if they wanted to take advantage of its multimedia capabilities but then boot into Windows if they needed to write a letter, create a spreadsheet or take advantage of other applications for the Windows platform. Be predicted that as its operating system became more widely deployed on "dual boot" computers, its growing user base would make it a more attractive platform for application developers.

139.   Like Microsoft, Be recognized the importance of pre-installation in the OEM channel. Indeed, overcoming the applications barrier required BeOS to be installed on as many Intel-compatible PCs as possible. To that end, Be eventually offered to license BeOS to OEMs for "dual-boot" installation at no cost.

140.   In September 1998, Hitachi verbally committed to Be that it would pre-install BeOS alongside Windows on a line of its personal computers. In November 1998, however, Hitachi informed Be that it could not install Be's boot manager or BeOS launcher on its computers; instead, BeOS would have to be booted from a floppy disk (which would

significantly impede end user access to the operating system). Hitachi eventually explained that the terms of its license with Microsoft prevented it from offering another operating system in a "dual-boot" configuration. Hitachi also informed Be that after it had notified Microsoft of its intent to pre-install BeOS, Microsoft sent two managers to Japan to express Microsoft's anger over the arrangement. Microsoft also threatened to raise the price of Windows to Hitachi if Hitachi installed Be's boot manager on its computers.

141.   Be's attempts to market BeOS to other OEMs confronted similar anticompetitive obstacles. Despite backing from Intel, the technical superiority of BeOS for multimedia applications, and the fact that Be eventually offered to license BeOS without royalty, Be was unable to convince even a single major OEM to risk Microsoft's ire by offering a dual boot PC with BeOS pre-installed. Be has thus been excluded from the market.

Microsoft's Predatory Response to GNU/Linux

142.   GNU/Linux is an "open source" operating system that runs on Intel-compatible PCs. Microsoft has targeted the competing operating system by pressuring Intel, as well as various major OEMs such as Dell and Compaq, to boycott Linux. In late 2000, for instance, Microsoft executive Joachim Kempin described his plan of retaliation and coercion to shut down competition from Linux: "I am thinking of hitting the OEM harder than in the past with anti-Linux actions" and will "further try to restrict source code deliveries where possible and be less gracious when interpreting agreements – again without being obvious about it," continuing "this will be a delicate dance."

143.   LindowsOS (now known as Linspire), which is developed and marketed by Lindows.com, Inc., is an Intel-compatible PC operating system based on Linux and which competes directly with Microsoft on the PC desktop. On information and belief, Microsoft

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interfered with Lindows.com, Inc.'s ability to distribute its product through the OEM channel. Microsoft also initiated a lawsuit against Lindows.com, Inc. that adversely affected Lindows.com, Inc.'s ability to exist, obtain funding and conduct business.

Microsoft's Anticompetitive Agreements With OEMs To Foreclose Competition

144.   Microsoft Chairman and former CEO, Bill Gates, reportedly summarized the effects of the DOJ's 1995 consent decree—which banned "per processor" licenses, among other exclusionary licensing terms—as "nothing." Microsoft was able to devise other restrictive OEM agreements to foreclose competition in the OEM channel, notwithstanding the consent decree

145.   A "per system" license was the practical equivalent of the "per processor" license. Under the "per system" license, the OEM had to pay royalties to Microsoft for every computer of a particular "model" or "system" that it shipped—again, as with the "per processor" contracts, regardless of whether the PC contained Microsoft's operating system. Microsoft defined "system" and "model" so broadly in its contracts that virtually all of an OEM's production was subject to Microsoft's "double tax" if the OEM wanted to give the consumer a choice of operating systems. Microsoft did not agree to give up its "per system" licenses in the 1995 consent decree, even though the Department of Justice warned the federal district court that "per system licenses, if not properly fenced in, could be used by Microsoft to accomplish anticompetitive ends similar to 'per processor' licenses"—and in fact were.

146.   Another way that Microsoft found to circumvent the federal court's 1995 injunction forbidding its use of "minimum commitment/per processor" licenses was what Microsoft calls its "Market Development Agreements" ("MDAs"). Microsoft contrived the MDA as a device to evade the Court's decree prohibiting Microsoft from requiring OEMs to adhere to "minimum commitments." As Steve Ballmer (Microsoft's current CEO)

acknowledged: "We have always given better prices to customers who work with us to make the market. Those used to take the form of commits [i.e., minimum commitments] which we do not do anymore as a result of the [federal court's] decree but we still believe in rewarding people who help us create demand. Hence the MDA." Under the MDAs, Microsoft granted large discriminatory price concessions to those OEMs that would agree to market and promote Microsoft's Windows to the exclusion of any rival operating system. These discounts were calibrated so as to force the OEM to sell most of its computers with a Microsoft operating system in order to obtain the lowest price.

147.   Because the OEM market is so competitive and profit margins are so thin, every OEM had to get the lowest price it could from Microsoft in order to survive. In March 2002, a Gateway marketing executive (Anthony Fama) testified before Judge Kollar-Kotelly in *State of New York et al. v. Microsoft*, Case No. 98-1233 (CKK), about how Microsoft used its MDA program in order to force OEMs to market Microsoft's operating system exclusively: "Given the substantial nature of these discounts, participation in the MDA, as a practical matter, is not optional. In other words, not receiving these discounts would put Gateway at a substantial competitive disadvantage, and Gateway has communicated that self-evident proposition to Microsoft." Microsoft also used its MDAs to lock OEMs in and competitors out by offering a discriminatory price to the OEM in a later year provided (a) the OEM reached Microsoft's imposed goal of Windows sales over competitive sales in the prior year and (b) renewed its exclusionary contract with Microsoft for the later year. This placed the OEM on a perpetual treadmill, eliminating competition indefinitely. Microsoft continued these exclusionary terms at least past April 2002.

148.   One method for encouraging competition in the operating systems market would have been the sale by OEMs of "naked machines" (i.e., computers that are sold without a predetermined suite of software forced upon the consumer). "Naked machines" would allow consumers to choose their computer's software configuration from an array of competitive software products, either for preinstallation by the OEM or installation by the end user. Microsoft sought and obtained the agreement of the OEMs to refrain from selling "naked machines." Instead, OEMs universally agree to "bundle" Microsoft applications and operating systems with their computer hardware, effectively depriving consumers of any competitive choices. These restrictive agreements existed before 2000 but, in 2000, Microsoft ratcheted the restriction up so that OEMs are forced to forfeit all discounts otherwise earned if they ship any "naked machines" to consumers. This heightened restriction, which (on information and belief) continues to the present, prohibits PC users and PC retailers from buying and installing lower priced or better quality operating systems of their choice.

Microsoft's Anti-Competitive Maintenance of the Applications Barrier to Entry

149.   By 1994, Microsoft had destroyed its two most significant competitors in the operating systems market as well as Go. Moreover, by that time Microsoft was secure that it would not encounter new competition from another clone operating system like DR-DOS since Windows had simply become too complex to be cloned. Only a non-clone, therefore, could potentially enter the operating system market. However, the applications barrier to entry--for reasons discussed above--made successful entry by a non-clone prohibitively expensive.

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150.   In addition to the exclusionary conduct intended to drive DR-DOS and OS/2 from the market, Microsoft's unlawful conduct also consisted of predatory responses to the growing popularity of software products that threatened to weaken or eliminate the applications barrier to entry. A succession of such products appeared on the market between 1988 and 1998, and each product was met with a rapid, strong and predatory response by Microsoft. Microsoft engaged in continuing violations of the Iowa Competition Law by means of such exclusionary, predatory conduct and other conduct through which it specifically intended to create market conditions in which end users were forced to purchase Microsoft products and were deprived of competitive substitutes therefore.

Microsoft's Predatory Response to Micrographx's Mirrors

151.   In the late 1980s, Micrographx offered a developer tool called Mirrors that allowed Windows applications readily to be ported to OS/2 and vice versa. Mirrors therefore had the capacity to substantially weaken the applications barrier to entry. Microsoft engaged in anti-competitive acts to eliminate the Mirrors threat.

152.   Microsoft induced Micrographx to share its confidential intellectual property on the representation that Microsoft was interested in licensing Mirrors for its applications programmers, and Microsoft signed a non-disclosure agreement. However, Microsoft then stopped pursuing such a license and eventually developed developer tools similar to Mirrors that it incorporated into its operating system, essentially eliminating demand for Mirrors as a stand-alone product.

153.   Promptly after Microsoft declined to license Mirrors, Micrographx sought to license the product to IBM. To avoid the prospect that IBM would obtain the Mirrors technology and be able to port Windows applications to run on OS/2, Microsoft took predatory

actions designed to, and which did, prevent that result.

Microsoft's Predatory Response to Borland's C++

154.   In the early 1990s Borland's C++ was the most popular programming language among PC applications developers. Borland's C++ had an Object Windows Library ("OWL") that enabled programmers to write applications that were platform independent, i.e., the applications could be written to OWL's, not the operating system's, APIs. Eventually, Borland innovated OWL to the point where it could be used to write applications that could be ported to Windows, OS/2, Macintosh, and UNIX with virtually no conversion effort.

155.   Seeing the threat that OWL posed to the applications barrier to entry, Microsoft embarked on a campaign to cripple Borland's C++. Microsoft prematurely announced the release of new versions of its competing developer tools and made false "vaporware" claims, to deprive Borland of the advantages of being the first mover and having the superior product.

156.   Furthermore, Microsoft refused to renew the license for its software developer kit ("SDK") to Borland unless Borland's C++ also carried and supported Microsoft Foundation Classes ("MFC"), which was Microsoft's counterpart to OWL. Borland literally could not sell C++ without SDK; on the other hand, if it shipped MFC in addition to OWL, developers would choose MFC as it would be the only library available as part of both the Borland and Microsoft developer tools. Borland had no choice but to choose the latter option. Microsoft's developer tools soon became dominant and its MFC, which carried the Windows APIs, perpetuated the applications barrier to entry.

Microsoft's Predatory Response to Intel's Native Signal Processing

157.   Microsoft's quashing of Intel's Native Signal Processing ("NSP") is yet another example of Microsoft's relentless campaign to eliminate all threats to its operating system

monopoly.

158.   By 1995, Intel had developed NSP software which promised to "endow Intel microprocessors with substantially enhanced video and graphics performance." Findings of Fact at ¶ 95. But because NSP had the potential to serve as a platform on which applications could be developed, Microsoft forced Intel into ceasing NSP development, flatly precluding that innovation from reaching consumers. Findings of Fact at ¶¶ 94-103. The District Court in *Microsoft III* found that "as late as the end of 1998 . . . Microsoft still had not implemented key capabilities that Intel had been poised to offer consumers in 1995." Findings of Fact at ¶ 101. Even after quashing the threat of Intel's NSP software, Bill Gates told Intel at a meeting in August 1995 that Intel could not count on Microsoft to support Intel's next generation of microprocessors if Intel was developing platform-level software that competed with Windows.

Microsoft's Predatory Response to Netscape's Navigator

159.   *Microsoft III* addressed actions taken by Microsoft to maintain the applications barrier to entry—and thus protect its monopoly power in the operating systems market—once Microsoft had successfully eliminated threats from DR-DOS and OS/2. The course of Microsoft's misconduct directed at Netscape's Navigator web browser is the subject of numerous conclusively established factual findings and legal conclusions from the government action, as detailed in this section.

160.   Netscape Navigator possessed middleware attributes that gave it the potential to diminish Microsoft's applications barrier to entry. First, it was a complement to (not a substitute for) Windows, and therefore could gain widespread use. Second, it could serve as a platform for other software, particularly network-centric applications that work in association with Web pages. Third, Navigator had been ported to more than fifteen different operating systems. If a

developer wrote an application that relied on the APIs exposed by Navigator, that application would, without any porting of its own, run on many different operating systems.

161.   As was established in *Microsoft III*, Navigator began to enjoy tremendous public acceptance shortly after its release in December 1994. Microsoft soon thereafter recognized the damage Navigator could cause its operating system monopoly. In a May 1995 memorandum, Bill Gates, the Chairman and CEO of Microsoft, described Netscape as a "new competitor 'born' on the Internet." He warned that Netscape was "pursuing a multi-platform strategy where they move the key API into the client to commoditize the underlying operating system." In other words, Netscape's browsers threatened to reduce or eliminate the key barrier to entry that protected Microsoft's monopoly power in the operating systems software market.

162.   As noted above, the applications barrier to entry, consisting of the large number of software applications that will run on the Windows operating system but not on other operating systems, has precluded potential developers of alternative operating systems from effectively competing with Windows on the desktop. If, however, applications could be written to run on multiple operating systems, then competition in the market for Intel-compatible PC operating systems could be reinstated.   Microsoft recognized that browser technology, in combination with Sun Microsystems' Java technologies, held out exactly that prospect, a threat which was altogether ominous for Microsoft when Mr. Gates wrote his "Internet Tidal Wave" memorandum in May 1995.

163.   Java was designed to permit applications written in its language to be run on multiple operating systems for Intel-compatible PCs, including but not limited to Windows. Given that facility, Java-based applications are not restricted to Windows as their only operating system, as was previously the case with other applications.   That daunting restriction has

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constituted the very foundation of the applications barrier to entry into the market for operating systems for Intel-compatible PCs that Microsoft created and continues to enjoy. The distribution of Java through Internet browsers that compete with Microsoft's Internet Explorer therefore threatened to eliminate the applications barrier to entry protecting Microsoft's monopoly of operating systems for Intel-compatible PCs. It correspondingly threatened to obliterate Microsoft's power to license its Windows operating systems for Intel-compatible PCs at monopoly prices, without regard to competition, in excess of what Microsoft would be able to charge in a competitive market.

164.   At the time Microsoft began its anti-competition campaign against Netscape, non-Microsoft Internet browsers were the most significant means of distributing Java technology to end users. Microsoft recognized that the widespread use of browsers other than its own Internet Explorer threatened to increase the distribution and use of Java, and in so doing threatened Microsoft's operating system monopoly by weakening the applications barrier to entry. Microsoft therefore determined aggressively to use its Internet Explorer to counter the threat to Microsoft's operating system monopoly presented by Java. A presentation to Microsoft Chairman Bill Gates on January 5, 1997, discussing how to respond to the Java threat, emphasized "Increase IE share" as a key Microsoft strategy.

165.   Microsoft separately recognized that Netscape's Navigator browser was itself a "platform" to which many applications were being written. Microsoft realized that if Navigator thrived, more and more applications would be written using Navigator as a platform. Because Navigator could be run on various PC operating systems (including numerous non-Microsoft operating systems), the success of this alternative platform also threatened to reduce or eliminate the applications barrier to entry which protected Microsoft's operating system monopoly.

Navigator—alone and in conjunction with Java—also threatened Microsoft's monopolies in word processing and spreadsheet applications software.

166.   To respond to the competitive threat to Microsoft's operating system monopoly posed by Netscape's Navigator browser, both as a platform and as a vehicle for distributing Java, Microsoft determined to embark on an extensive and aggressive campaign to market and distribute Microsoft's Internet Explorer browser and to impede the distribution of Navigator. Microsoft described its campaign as a "jihad" to win the "browser war." Microsoft embarked on that "jihad" because winning the "browser war" was essential to its ability to preserve the applications barrier to entry and to thereby preserve Microsoft's power to license its Windows operating systems at monopoly prices.   It was also necessary to preserve Microsoft's ability to license its Word and Excel applications at supra-competitive prices.

167.   On information and belief, Microsoft's exclusionary campaign against Netscape continued even after the trial in *Microsoft III*.

Attempted Allocation of Browser Market

168.   Microsoft first attempted to eliminate competition from Netscape by soliciting an express horizontal agreement not to compete.   Microsoft executives met with Netscape executives for the purpose of inducing Netscape not to compete with Microsoft and to divide the browser market under the proposal it presented to Netscape.   Microsoft would be the sole supplier of browsers for use with Windows 95 and successor operating systems, and that Netscape would be the sole supplier of browsers for operating systems other than Windows 95 and its successors.   Netscape refused to participate in Microsoft's patently unlawful market allocation scheme.

169.   Microsoft refused to abandon its anticompetitive strategy.   Instead, it escalated its predatory course of conduct aimed at eliminating the browser threat to the Windows operating system monopoly.   Microsoft thereupon set out to exclude Netscape and other browser rivals from access to the distribution, promotion, and resources that they needed in order to be competitive.   To be successful, browser rivals such as Netscape would need to be able to offer their browser products to OEMs and PC users at a level sufficiently pervasive to facilitate the widespread distribution of Java, or to facilitate their browsers becoming an attractive programming platform in their own right.   As has been shown above, those two potential scenarios would, either alone or in combination, erode the applications barrier to entry that is the basis of Microsoft's operating system monopoly. Microsoft was determined not to let either scenario come to pass.

170.   Microsoft sank hundreds of millions of dollars into the testing and promotion of Internet Explorer, and then distributed that product without separate charge. Such actions would only make sense to a predatory monopolist. As if any further explanation of that behavior were necessary, Microsoft's Vice President in charge of the Platforms Group told industry executives: "We are going to cut off [Netscape's] air supply. Everything they're selling, we're going to give away for free." And Microsoft's Chairman Bill Gates boasted in June 1996: "Our business model works even if all [of Microsoft's] Internet software is free.... We are still selling operating systems. What does Netscape's business model look like? Not very good."

171.   In addition to free distribution of Internet Explorer, Microsoft did whatever it took to make sure significant market participants distributed and used Internet Explorer instead of

Netscape's Navigator, including paying some customers to take IE and using its Windows monopoly power to induce others to do so. Mr. Gates was blunt in seeking the support of Intuit, a significant application software developer, as he reported in a July 1996 Microsoft e-mail:

> I was quite frank with him [Scott Cook, Chairman of Intuit] that if he had a favor we could do for him that would cost us something like $1M to do that in return for switching browsers in the next few months I would be open to doing that.

172.   All told, Microsoft's campaign against Netscape ultimately involved a range of anti-competitive acts, including, *inter alia*:

a.   After Netscape refused Microsoft's offer to divide the Web browsing market, Microsoft withheld crucial technical information from Netscape. At a meeting in June 1995, Netscape representatives requested technical information from Microsoft. A Microsoft representative indicated that Netscape's response to Microsoft's offer of a "special relationship" would determine whether Netscape received this information immediately or in three months. Subsequently, despite Netscape's repeated requests for this information, Microsoft withheld it until late October, more than three months later. The delay forced Netscape to postpone the release of its Windows 95 browser, causing it to miss most of the holiday selling season;

b.   Microsoft withheld a scripting tool that Netscape needed to make its browser compatible with certain ISPs. In mid-August 1995, a Microsoft representative informed Netscape that Microsoft was linking the grant of a license for the scripting tool to the resolution of all open issues. Netscape never received the license and, as a result, was unable for a time to do business with certain ISPs;

c.   Microsoft conditioned the placement of an Internet Service Provider on the

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"Internet Connection Wizard" screens or in the Online Services folder in Windows 95 on the ISP's agreement to deny most or all of its subscribers a choice of Internet browser. At the time, approximately one-third of Internet browser users obtained their browsers from their service provider, so Microsoft's exclusionary agreements with these firms had a substantial foreclosure effect on Netscape Navigator and other browsers;

d.   Microsoft entered into exclusionary agreements with Internet Content Providers such as Disney, Hollywood Online, and CBS Sportsline, which provide news, entertainment, and other information from sites on the Web. In order to achieve priority placement on the Windows desktop screen after installation of Internet Explorer, Microsoft required ICPs to agree: (i) not to compensate manufacturers of "other browsers" (defined as either of the two top non-Microsoft browsers) by distributing its browser or by payments to the other browser for distributing, marketing, or promoting the ICP content; (ii) not to promote any other browser; (iii) not to allow any other browser to promote the ICP channel content; and (iv) to design the ICP Web sites using Microsoft-specific programming extensions so that the sites looked better with Internet Explorer than with a competing browser;

e.   Microsoft imposed license restrictions that prevented OEMs from altering the Windows 95 boot-up sequence. These restrictions increased Microsoft's ability to require preferential treatment for Internet Explorer from ISPs and ICPs in return for access to the Windows desktop. These restrictions also limited an OEM's ability to substitute or feature a non-Microsoft browser or other application;

f.   Microsoft bundled Internet Explorer with Windows 95 in licensing agreements

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with OEMs, in order to foreclose choice by OEMs;

g.   Microsoft tied, both contractually and technically, Internet Explorer to Windows

98 and subsequent versions of Windows.

173.   The result of Microsoft's campaign against Netscape Navigator was a dramatic

reversal in market share. Navigator's share fell from above 80 percent in January 1996 to 55

percent in November 1997, and Internet Explorer's share rose from five percent to 36 percent

over the same period. Internet Explorer's share by the latter part of 1998 had reached

approximately 50 percent. IE's share has been steadily rising as Windows 95 users have

converted to Windows 98 and to subsequent versions of the operating system. Recent estimates

place Internet Explorer's share at more than 90 percent of the market.

Microsoft's Licenses Issued to Original Equipment Manufacturers

174.   In its continuing "jihad" to win the "browser war" Microsoft has gone to the

extreme of controlling the content of the computer screen that the PC end user sees. To that end,

Microsoft abused its Windows operating system monopoly by requiring OEMs to agree, as a

condition of acquiring a license to the Windows operating system, to adopt the uniform "boot-

up" sequence and "desktop" screen that Microsoft has dictated. The "boot" sequence determines

the screens that every user sees upon turning on a Windows-based PC. Microsoft's exclusionary

restrictions also prohibited, among other things, any changes by an OEM that would remove

from the PC any part of Microsoft's Internet Explorer software. OEMs were also prohibited by

Microsoft from adding to the PC a competing browser in any more prominent or visible way than

the way Microsoft required Internet Explorer to be presented.

175.   Beginning in or about August 1996, Microsoft prohibited sellers of personal

computers from altering the Windows 95 boot sequence. Specifically, Microsoft's license